
**Industrial furnaces and associated
processing equipment — Method of
measuring energy balance and
calculating efficiency —**

**Part 2:
Reheating furnaces for steel**

*Fours industriels et équipements associés — Méthode de mesure du
bilan énergétique et de calcul de l'efficacité —*

Partie 2: Fours de réchauffage pour acier





COPYRIGHT PROTECTED DOCUMENT

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction.....	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Terms related to type of energy used in this part of ISO 13579	2
4 Symbols	5
5 Basic principles	7
5.1 General	7
5.2 Energy flow diagram	9
5.3 Process Heating Assessment Survey Tool	10
6 Basic conditions of measurement and calculation	10
6.1 State of furnace	10
6.2 Duration of measurement	10
6.3 Unit of specific energy intensity	10
6.4 Reference conditions	10
6.5 Unit of amount of gas	10
6.6 Fuel	10
7 Type of energy evaluated in this part of ISO 13579 and its systematization	10
7.1 General	10
7.2 Energy balance	10
7.3 Thermal energy balance	12
7.4 Energy balance of electrical generation	13
7.5 Recycled energy	14
8 Measurement method	14
8.1 General	14
8.2 Fuel	14
8.3 Atomization agent	14
8.4 Combustion air and exhaust gas	15
8.5 Controlled atmospheric gas	15
8.6 Products and jigs/fixtures for products handling	16
8.7 Temperature of furnace surface	16
8.8 Furnace inner wall temperature	16
8.9 Inner furnace pressure	16
8.10 Cooling water	16
8.11 Electrical auxiliary equipment	17
8.12 Generation of utilities	17
8.13 Recycled energy	17
9 Calculation	17
9.1 General provisions	17
9.2 Total energy input	17
9.3 Total energy output	18
9.4 Total energy efficiency	21
10 Energy balance evaluation report	21
Annex A (informative) Reference data	22